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| 10/706,742 | 11/12/2003 | Hans F. van Rietschote | 5760-16400 | 7542 |

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| ART UNIT | PAPER NUMBER |
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2187

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/706,742 | Applicant(s) VAN RIETSCHOTE ET AL. | |
| | Examiner Hashem Farrokh | Art Unit 2187 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23,25,29,35 and 38 is/are rejected.
- 7) ☒ Claim(s) 26-28,30-34,36 and 37 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3 on 04, 1 on 05</u> | 6) <input type="checkbox"/> Other: _____ |

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The instant application having application No. 10/706,742 has a total of 38 claims pending in the application; there are 5 independent claims and 33 dependent claims, all of which are ready for examination by the examiner.

INFORMATION CONCERNING CLAIMS:

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-23 are rejected under 35 U.S.C. 101 because:

- 1. Claims 1-23 are not limited to tangible embodiments. In view of applicants' disclosure, specification page 24, lines 7-13, the medium is not limited to tangible embodiments, instead being defined as including both tangible embodiments (e.g., storage media such as magnetic or optical media, e.g., disk, CD-ROM...) and intangible embodiments (e.g., transmission media or signals...). As such, the claims are not limited to statutory subject matter and are therefore non-statutory.*

Applicant can overcome the above 101 rejection by amending the claims to replace "computer accessible medium" with "computer storage accessible medium"

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 7-9, 16-19, 23-25, 35 and 38 are rejected under 35

U.S.C. 102(3) as being anticipated by U.S. Patent No. 6,754,781 B2 to Chauvel et al. (hereinafter Chauvel).

2. In regard to claim 1 Chauvel teaches:

"A computer accessible medium comprising instructions which (e.g., see column 2, lines 25-32; elements 710 and 1502 in Fig. 10), when executed:"

(a) check a first storage from which a computer system is configured to boot (e.g., column 19, line 65) for a block identified in a read request generated on the computer system (e.g., column 6, lines 53-56), wherein the block is included within an image of a set of software resources to be provisioned on the computer system;" (e.g., see column 6, lines 53-56). For example a portion of address is used to identify the data in the cache memory (or first storage) or a secondary or external storage.

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“(b) if the block is stored in the first storage (**e.g., elements 8, lines 51-54**), supply the block from the first storage in response to the read request; and” (**e.g., elements 8, lines 51-54**). *For example the portion address is compared to the tag stored in the cache to determine if the data is stored in the cache (e.g., hit-hit). If data is in the cache, it will be presented or supplied to the processor.*

“(c) if the block is not stored in the first storage: fetch at least the block from an image repository system that stores the image;” (**e.g., see column 9, lines 13-17**). *For example if the read request misses the cache the data is accessed from a second level memory.*

“store the block in the first storage;” (**e.g., see column 9, lines 13-17**). *The data is placed in the cache line.*

“supply the block in response to the read request.” (**e.g., see column 9, lines 13-17**). *The requested data is provided or supplied to the processor.*

3. *In regard to claim 2 Chauvel teaches:*

“wherein the read request is generated in response to the computer system executing one or more of the set of software resources.” (**e.g., see column 2, lines 25-30**).

4. *In regard to claim 7 Chauvel teaches:*

“wherein the instructions, when executed, maintain a map identifying which blocks of the image are stored in the first storage, and wherein checking the first storage for the block comprises checking the map.” (**e.g., see column 16, lines 35-39**). *For example the dirty bits represent the map recited in the claim. The*

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dirty bit indicates the data (e.g., cache line) that is written to the cache but not yet transferred to the secondary or external storage.

5. *In regard to claims 8 and 18 Chauvel teaches:*

“wherein the instructions, when executed, are configured to update the map to indicate that the block is stored in the first storage in response to fetching the block from the image repository system and storing the block in the first storage.” **(e.g., see column 8, lines 54-65).** *For example a valid bit indicates that the data stored in the cache or local memory is valid.*

6. *In regard to claim 9 Chauvel teaches:*

“wherein the instructions, when executed in response to a write request, store a second block supplied in the write request in the first storage and update the map to indicate that the second block is stored in the first storage and is modified with respect to the image in the image repository system.” **(e.g., see column 2, lines 25-37).** *For example dirty bits indicates the cache lines (e.g., including second block) in the cache or local memory are modified or updated with respect to the external storage.*

7. *In regard to claims 16, 23 and 38 Chauvel teaches:*

“wherein the first storage comprises a local storage of the computer system.” **(e.g., see column 3, lines 21-22).**

8. *In regard to claim 17 Chauvel teaches:*

“A computer accessible medium **(e.g., see column 2, lines 25-32; elements 710 and 1502 in Fig. 10)** comprising”

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“store a block identified in a write request generated within a computer system to a first storage from which the computer system is configured to boot (**e.g., see column 15, line 49; column 19, line 65**), the block included in an image of a set of software resources that are provisioned on the computer system;” (**e.g., see column 4, lines 25-30**). *For example access request include both read and write. The software or data is identified by a portion of address in the access request.*

“and record that the block is modified with respect to the image stored in an image repository system.” (**e.g., see column 15 lines 44-55**). *For example the “dirty bit” records that the dirty cache line, which is a block of data modified with respect to the external or secondary memory. The data with associated dirty indicators will be written to the external memory*

9. *In regard to claim 19 Chauvel teaches:*

“wherein the instructions, when executed, transmit the block to the image repository system.” (**e.g., see column 2 lines 4-10**). *For example the data with corresponding dirty bits are DMA transferred (e.g., transmitted from local to the external memory).*

10. *In regard to claim 24 Chauvel teaches:*

“A method for provisioning a computer system with a set of software resources, the method comprising:” (**e.g., see column 2 lines 25-30**).

“initiating execution of the set of software resources on the computer system prior to storing at least some blocks comprising the set of software resources to a

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first storage from which the computer system is configured to boot;" (e.g., see **column 19 lines 45-60; Figs 13 and 15A**).

"the computer system generating a read request (e.g., see **column 2 line 30**) for a first block of the blocks comprising the set of software resources;" (e.g., see **column 6 lines 53-56; Fig. 4**).

"if the first block is stored in the first storage, supplying the first block from the first storage;" (e.g., see **column 8 lines 47-54; Fig. 5**).

"if the first block is not stored in the first storage: fetching the first block from an image repository system that stores an image of the set of software resources;" (e.g., see **column 9 lines 13-17**).

"storing the first block in the first storage;" (e.g., see **column 9 lines 13-17**).

"supplying the first block in response to the read request." (e.g., see **column 9 lines 16-17**).

11. *In regard to claim 25 Chauvel teaches:*

"wherein initiating execution of the set of software resources comprises responding to a remote boot request from the computer system with a plurality of instructions which, when executed, initiate the execution." (e.g., see **column 19 line 51**).

12. *In regard to claim 35 Chauvel teaches:*

"An apparatus (**Fig. 1**) comprising: an image repository configured to store an image of a set of software resources;" (e.g., see **column 9 lines 13-17; Fig. 10**).

For example the external memory taught by Chauvel represents the image repository recited in the claim.

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"a computer system configured to execute the set of software resources, and wherein the computer system is configured to track which blocks in a first storage from which the computer system is configured to boot (**e.g., column 19, line 65**) and which correspond to the image are updated with respect to the image stored on the image repository (**e.g., see column 2, lines 25-37**), the updates generated by the computer system during execution of the set of software resources;" (**e.g., see column 15, lines 44-55**). *For example Chauvel teaches that dirty bits are used to track to updated or modified data.*

"wherein a snapshot of the image as updated by the computer system is generated by transmitting the modified blocks from the computer system to the image repository system and not transmitting unmodified blocks." (**e.g., see column 16, lines 53-58**).

Claims 29 is rejected under 35 U.S.C. 102(3) as being anticipated by U.S. Patent Publication No. 2003/0097422 A1 to Richards et al. (hereinafter Richards).

13. *In regard to claim 29 Richards teaches:*

"An apparatus (**Fig. 1**) comprising: an image repository system configured to store an image of a set of software resources;" (**e.g., see paragraph 6 in page 1; paragraph 54 in page 3**). *For example the boot server represents the image repository system recited in the claim.*

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"a computer system (**e.g., see paragraph 21 in page 1**), wherein the computer system is configured to transmit a remote boot request in response to booting;" (**e.g., see paragraph 54 in page 3**).

"wherein the image repository system is coupled to receive the remote boot request (**e.g., see paragraph 54 in page 3**), and wherein the image repository system is configured to detect that the computer system is to be provisioned with the set of software resources (**e.g., see paragraph 22 in page 2**), and wherein the image repository system is configured to respond to the remote boot request with a program which (**e.g., see paragraph 54 in page 3**), when executed by the computer system, initiates execution of the set of software resources prior to at least some blocks in the image being copied to the computer system." (**e.g., see paragraph 58 in page 3; Fig. 3**). *Richard teaches that a client computer system can be remotely booted to be provision by a set of software images from a boot server.*

ALLOWABLE SUBJECT MATTER

Claim 3-6, 10-15, 20-22 are rejected under 35 U.S.C. 101 since they are directed to non-statutory subjected matters. However, they are being objected because they are dependent on rejected based claims (see below).

Claims 3-6, 10-15, 20-22, 26-28, 30-34 and 36-37 are objected to as being dependent upon rejected based claims, but would be allowable if rewritten in correct and independent form including all of the limitations of the base claim and any intervening claims.

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1. *The primary reason for allowance of claims 3-6 in instant application is the combination with the inclusion of the following limitations: wherein the instructions, when executed: establish a virtual machine on the computer system; trap reads by the virtual machine to the image; and for each read, perform (a), (b), and (c).*
2. *The primary reason for allowance of claims 10-12 in instant application is the combination with the inclusion of the following limitations: receive a request from the image repository system for modified blocks within the image; identify modified blocks within the map; and transmit the modified blocks to the image repository system.*
3. *The primary reason for allowance of claims 13-15 in instant application is the combination with the inclusion of the following limitations: receive one or more additional blocks from the image repository system, wherein the one or more additional blocks are received independent of read requests generated in the computer system and received by the device driver*
4. *The primary reason for allowance of claims 20-22 in instant application is the combination with the inclusion of the following limitations: record that the block is not updated with respect to the image stored in the image repository system responsive to the acknowledgement.*
5. *The primary reason for allowance of claims 26-28 in instant application is the combination with the inclusion of the following limitations: establishing a virtual machine on the computer system, the virtual machine initiating the execution of the set of software resources, the virtual machine generating*

the read request; trapping the read request by the virtual machine to the first storage.

6. The primary reason for allowance of claims 30-34 in instant application is the combination with the inclusion of the following limitations: **wherein the computer system includes a first storage that is to store the image, and wherein the set of software resources includes a device driver for the first storage which, when executed in response to a read request generated responsive to executing the set of software resources, is configured to check the first storage for a first block identified by the read request, and wherein the device driver is configured to supply the first block from the first storage if the first block is stored in the first storage.**

7. The primary reason for allowance of claim 36-37 in instant application is the combination with the inclusion of the following limitations: **wherein the image repository system is configured to transmit an acknowledgement to the computer system in response to receiving the modified blocks.**

: IMPORTANT NOTE :

*If the applicant should choose to rewrite the independent claims to include the limitations recited in either one of the claims, the applicant is encouraged to **amend the title of the invention** such that it is descriptive of the invention as claimed as required by sec. 606.01 of the MPEP. Furthermore, the **summary of invention** and the **abstract** should be amended to bring them into harmony with the allowed claims as required by paragraph 2 of sec. 1302.01 of the MPEP.*

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As allowable subject matter has been indicated, applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 C.F.R. § 1.111(b) and § 707.07(a) of the M.P.E.P.

Conclusion

The prior art made of record and not relied upon are as follows:

- 1. U. S. Patent Publication No. 2004/0268340 A1 to Steeb et al. describes Managing multiple devices on which operating systems can be automatically deployed.*
- 2. U. S. Patent Publication No. 2003/0126242 A1 to Chang describes Network boot system and method using remotely-stored, client-specific boot images created from shared, base snapshot image.*
- 3. U. S. Patent No. 6,421,777 B1 to Pierre-Louis et al. describes Method and apparatus for managing boot images in a distributed data processing system.*
- 4. U. S. Patent No. 6,799,316 B1 to Aguilar et al. describes Virtualizing hardware with system management interrupts.*

Any inquiry concerning this communication should be directed to Hashem Farrokh whose telephone number is (571) 272-4193. The examiner can normally be reached Monday-Friday from 8:00 AM to 5:00 PM.


If attempt to reach the above noted Examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Donald A Sparks, can be reached on (571) 272-4201.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBS) at 866-217-9197 (toll-free).

HF
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2006-06-10



DONALD SPARKS
SUPERVISORY PATENT EXAMINER